CLAIMS

What is claimed is:

1. A resorbable interbody spinal fusion device for spinal fixation, said device comprising 25-100% resorbable material.

2. The resorbable interbody spinal fusion device of claim 1, further comprising one or more void spaces therein.

3. The resorbable interbody spinal fusion device of claim 2, wherein one of said one or more void spaces contains a grafting material for facilitating bony development and/or spinal fusion.

4. The resorbable interbody spinal fusion device of claim 3, wherein said grafting material is an autologous grafting material.

5. The resorbable interbody spinal fusion device of claim 1, wherein said device is shaped substantially as a tapered wedge or cone.

6. The resorbable interbody spinal fusion device of claim 1, wherein said device is shaped substantially as a threaded screw.

7. The resorbable interbody spinal fusion device of claim 1, wherein said device is shaped substantially as a threaded rod of cruciform configuration.

8. The resorbable interbody spinal fusion device of claim 5, further comprising at least one serrated or threaded outer face.

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9. The resorbable interbody spinal fusion device of claim 1, wherein said resorbable material is a polymer producing acidic products or low molecular weight resorbable fragments upon hydrolytic degradation.

10. The resorbable interbody spinal fusion device of claim 9, wherein said resorbable material further comprises a buffering or neutralizing agent in sufficiently high concentration to moderate the rate of change of pH of said resorbable material during resorption.

11. The resorbable interbody spinal fusion device of claim 1, wherein said resorbable material is a polymer selected from the group consisting of polydioxanone, poly(ε-caprolactone), polyanhydride, polyester, copoly(ether-ester), polyamide, polylactone, poly(propylene fumarate), and combinations thereof.

12. The resorbable interbody spinal fusion device of claim 11, wherein said bioerodible polymer comprises poly(lactide-co-glycolide) with a lactide to glycolide ratio in the range of 0:100% to 100:0% inclusive.

13. The resorbable interbody spinal fusion device of claim 10, wherein said buffering or neutralizing agent is a polymer comprising at least one basic group.

14. The resorbable interbody spinal fusion device of claim 13, wherein said polymer comprising at least one basic group is selected from the group consisting of polyamines, polyesters, vinyl polymers, and copolymers of acrylic acid.

15. The resorbable interbody spinal fusion device of claim 10, wherein said buffering or neutralizing agent is

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sub a3

a compound that, on exposure to water, hydrolyzes to form a base.

16. The resorbable interbody spinal fusion device of claim 10, wherein said buffering or neutralizing agent is selected from the group consisting of carbonates, phosphates, acetates, succinates and citrates.

17. The resorbable interbody spinal fusion device of claim 1 wherein said resorbable material further comprises reinforcing fibers.

18. The resorbable interbody spinal fusion device of claim 17, wherein said reinforcing fibers are made of said resorbable material.

19. The resorbable interbody spinal fusion device of claim 10, wherein said resorbable material further comprises reinforcing fibers.

20. The resorbable interbody spinal fusion device of claim 19, wherein said reinforcing fibers are made of said buffering or neutralizing agent.

21. A method of making a resorbable interbody spinal fusion device, comprising the steps of:

providing a mold for said resorbable interbody spinal fusion device;

orienting reinforcing fibers under tension in said mold;

introducing a resorbable material into said mold;

molding said resorbable material under pressure; and

releasing tension on said reinforcing fibers prior to removing said device from said mold.

22. The method of claim 21 wherein said resorbable

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reinforcing fibers are made of the same material as said resorbable interbody material.

23. The method of claim 21 wherein said resorbable reinforcing fibers do not contain a buffer.

24. The resorbable interbody spinal fusion device of claim 10 wherein said buffering or neutralizing agent is selected from the group consisting of compounds wherein the pKa of the conjugate acids of said compounds is greater than the pKa of acids produced by hydrolysis of the polymer(s) from which said device is prepared.

25. The resorbable interbody spinal fusion device of claim 1, wherein said device is fabricated from at least two resorbable polymers.

26. The resorbable interbody spinal fusion device of claim 25, wherein one of said resorbable polymers is poly (propylene fumarate).

27. The resorbable interbody spinal fusion device of claim 25, wherein one of said resorbable polymers has been cross-linked in the presence of a crosslinking agent and an initiator, whereby said crosslinked resorbable polymer forms a reinforcing interpenetrating network.

28. The resorbable interbody spinal fusion device of claim 25, wherein said crosslinking agent is vinyl pyrrolidone.

29. The resorbable interbody spinal fusion device of claim 25, wherein said initiator is benzoyl peroxide.

30. The resorbable interbody spinal fusion device of claim 1, wherein said device is fabricated from a polymer

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wherein molecular chains of said polymer have been aligned to be essentially parallel.

31. The resorbable interbody spinal fusion device of claim 30, wherein said device has been cut such that the aligned polymer molecular chains are at approximately a 45° angle to a surface of said device.

32. A resorbable interbody spinal fusion device, wherein said device is substantially manufactured from a resorbable material poly(d,l-lactide-co-glycolide), said device further comprising a buffering or neutralizing agent wherein said buffering or neutralizing agent is hydroxyapatite, and wherein said device further comprises one or more void spaces therein.

33. A resorbable interbody spinal fusion device for spinal fixation, said device comprising 25-100% resorbable material, said device further comprising a buffering or neutralizing agent wherein said buffering or neutralizing agent is hydroxyapatite, and wherein said device further comprises one or more void spaces therein.

34. A resorbable interbody spinal fusion device for spinal fixation, said device comprising 25-100% resorbable material, said device further comprising a buffering or neutralizing agent wherein said buffering or neutralizing agent is hydroxyapatite.

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